Rhythm Global Decision Support Solutions

"Driving Global Competitive Business Dominance Through Multi-Enterprise Business Optimization"

i2 Technologies

i2 provides solutions that enables people to

make optimized decisions

Rhythm Optimization Definitions

- **APS Engine:** Individual module which, on a stand alone basis, represents and solves a specific component of an overall business problem

  Example: Rhythm Factory Planner solves the manufacturing component of a total supply chain optimization problem

- **Resolvers:** Algorithms that represent and solve a specific constrained problem within an overall APS module

  Example: Rhythm Supply Chain Planner uses heuristic resolvers in the form of business logic rules to generate feasible solutions

Rhythm Optimization Definitions

- **Solutions:** Collection of APS engines which combine to solve a customers business problem

  Example: Master Planning solution which involves Rhythm Forecast Planner, Rhythm Supply Chain Planner, Rhythm Factory Planner and Rhythm Sales & Operations Planner

- **Multi-Engine Solutions:** Solutions which involve an interaction among multiple APS engines in order to achieve optimization

  Example: Rhythm Supply Chain Planner drawing on Rhythm Factory Planner and Venture Freight Optimizer to generate an integrated supply chain optimed solution spanning manufacturing and distribution

Potential North American Retail Supply Chain Benefits

RHYTHM®

Current Status

- Total Cost: $1,200 Billion
- Inventories: $800 Billion
- Lost Sales: $180 Billion

Potential Benefits

- Total Cost Reduction: 25%
  $300 Billion/YR
- Inventory Reduction: 50%
  $400 Billion/YR
- Increased Revenue: 10%
  $120 Billion/YR

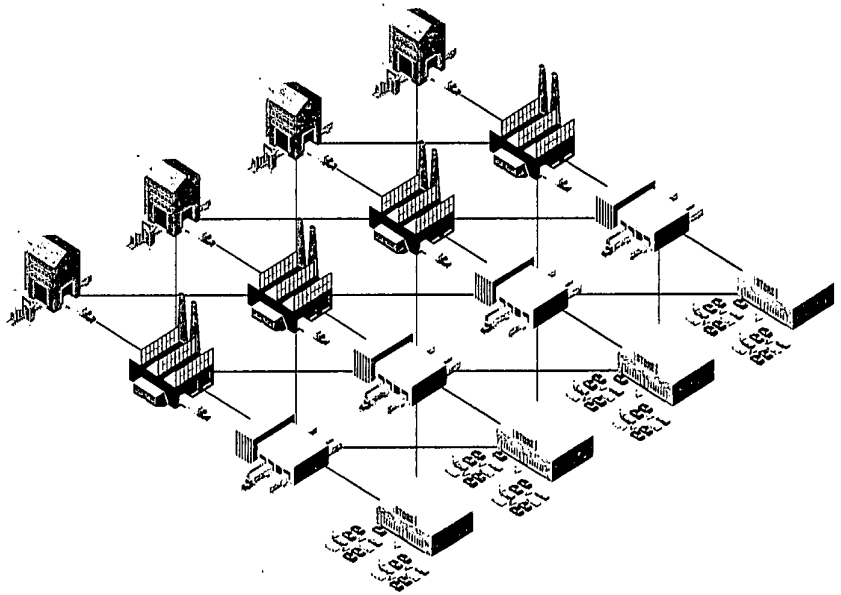
Sources : Benchmarking Partners,
Voluntary Inter-Enterprise Commerce Standards (VICS)

i2 Technologies

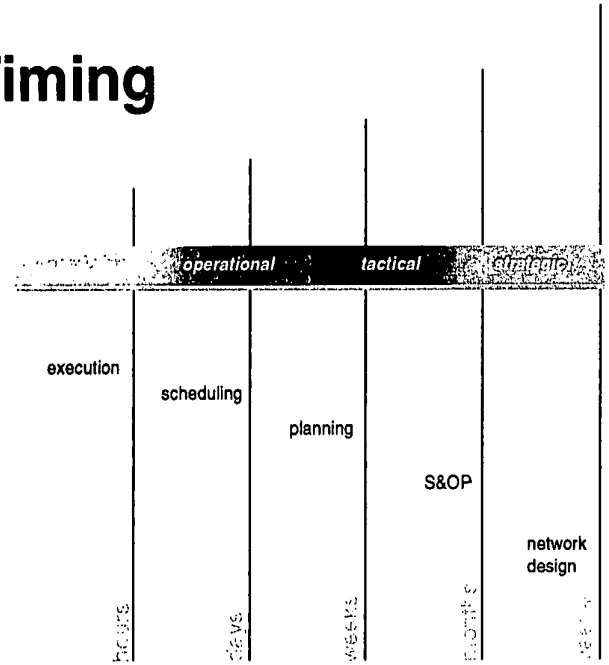
Optimized Decisions: Business Drivers

RHYTHM®

- Supply Chain Complexity



- Timing

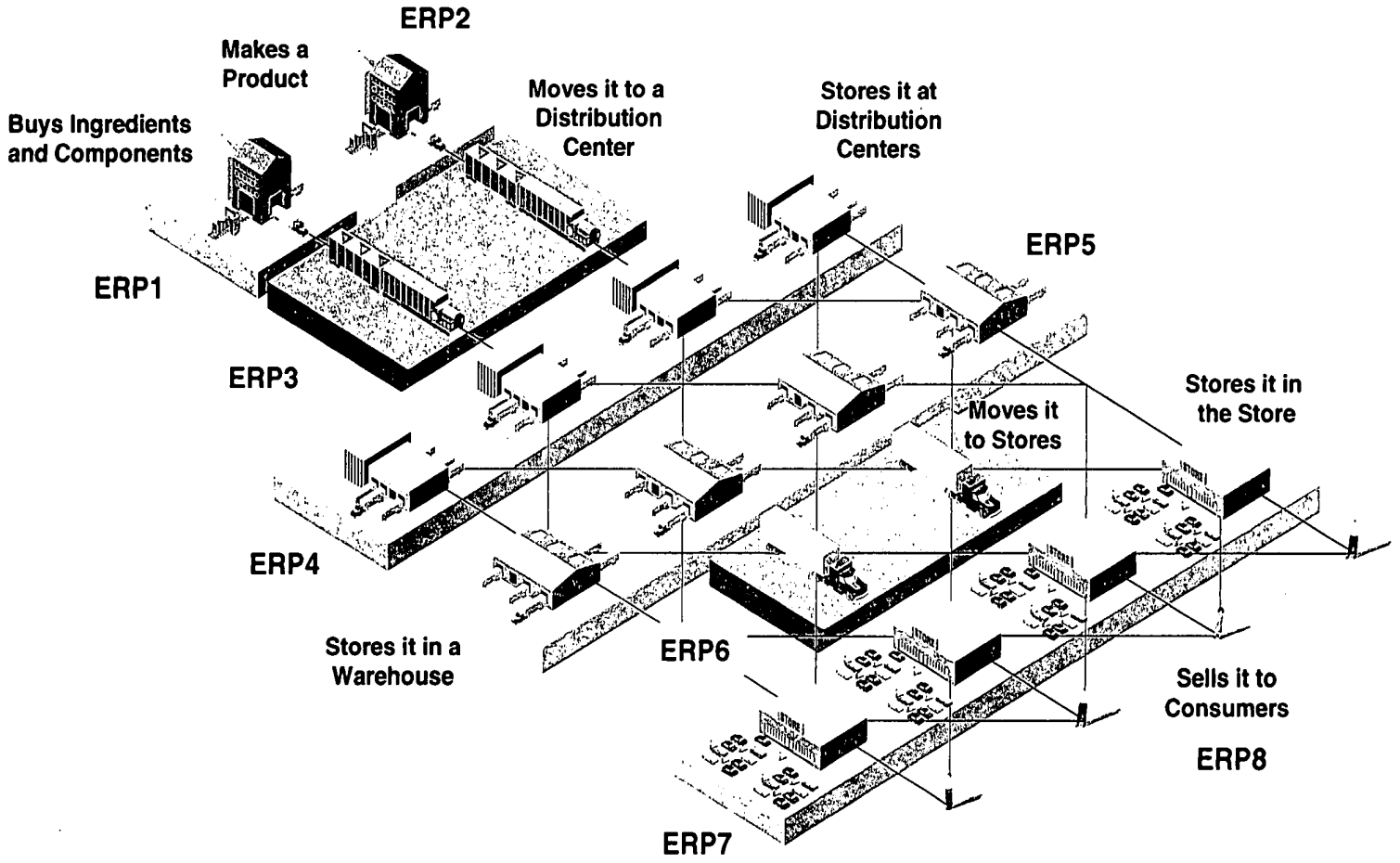


The Planning Funnel

i2 Technologies

Business Challenge: Multi-Enterprise Supply Chain

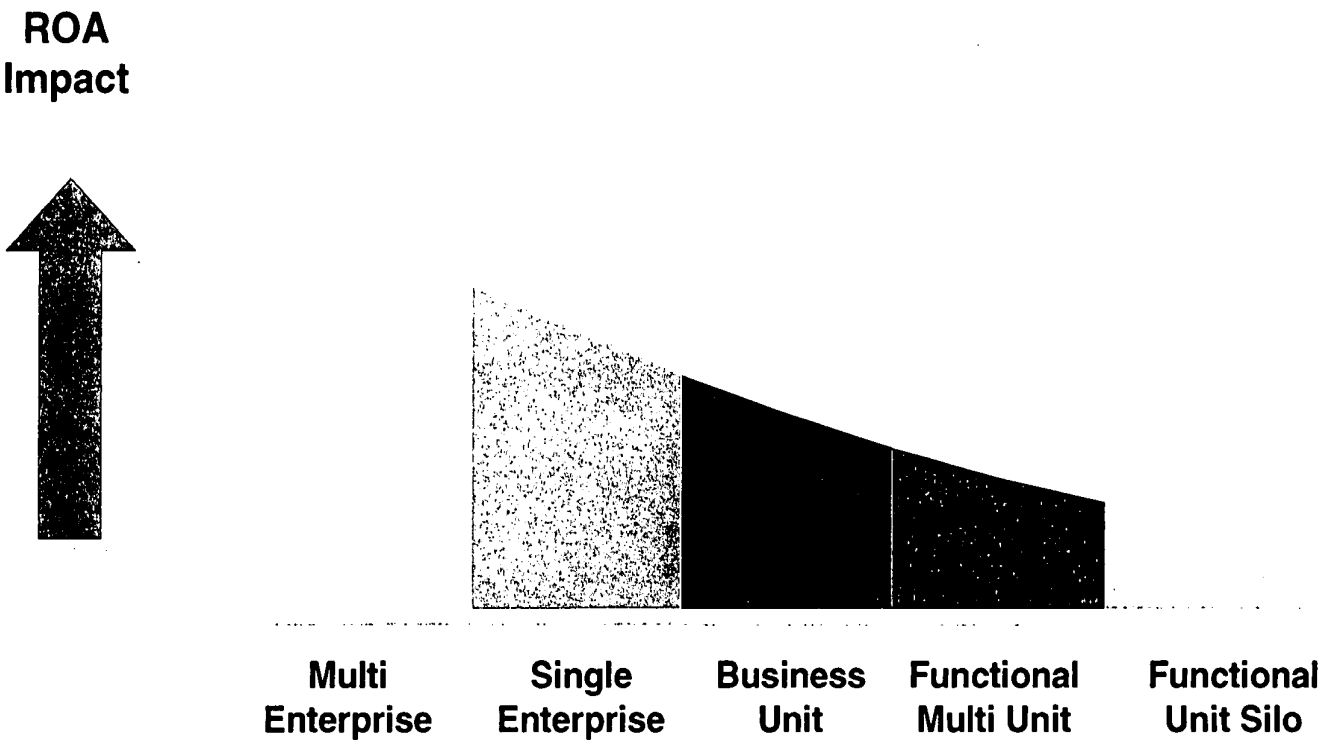
RHYTHM®



i2 Technologies

The Potential Impact on ROA Increases Dramatically Over Multiple Domains

RHYTHM®



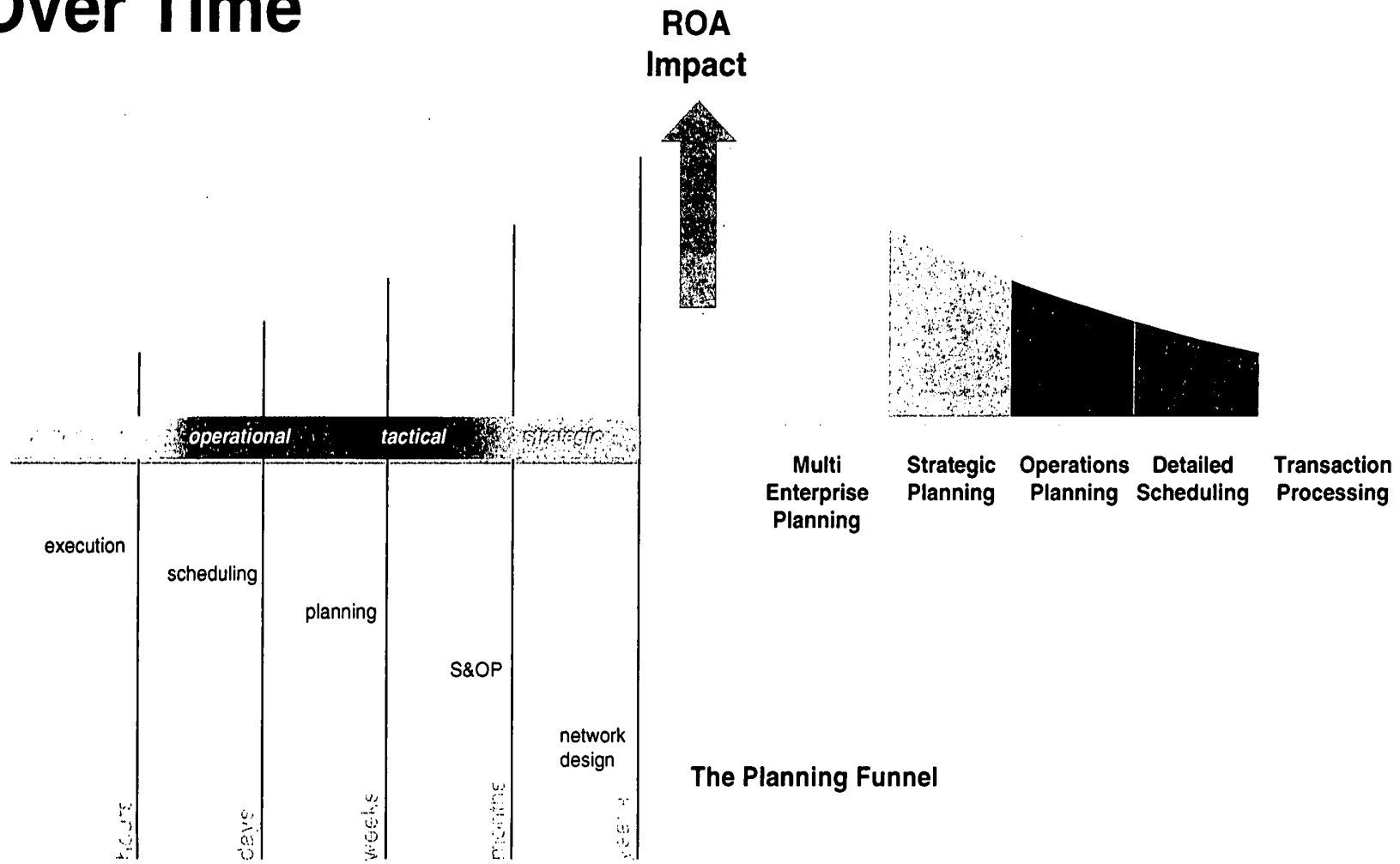
i2 Technologies

Business Challenge: Multi-Enterprise Supply Chains

- **Integrated supply chains** are increasingly being pitted against each other for dominance and survival
- **Harmonizing multiple control domains**: Functional Silos, Business Units, Enterprises
- **Solution integration of multiple business processes**, as well as integrating planning, execution, monitoring and control phases
- **Single face to customer/supplier** across all domains maximizes leverage
- **Benefits** flow from maximizing customer service and revenues, and minimizing total delivered cost and resources

The Potential Impact on ROA Increases Dramatically Over Time

RHYTHM®



The Planning Funnel

i2 Technologies

Business Challenge: Timing of Decisions

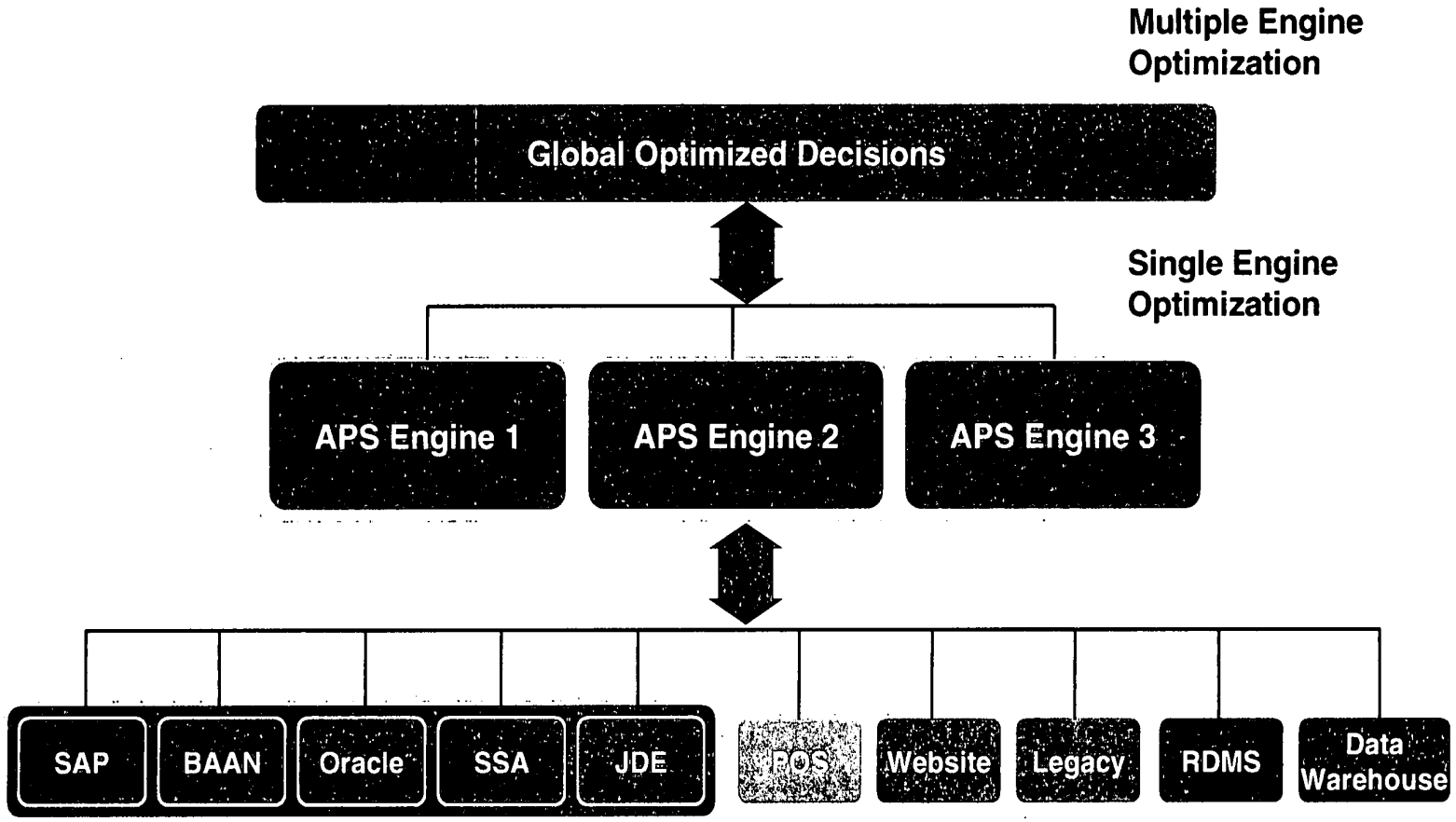
- **Planning Funnel** scope drives ROA impact potential through increasing number of options and degrees of freedom

- **Advanced Planning and Scheduling (APS)** systems, which can simulate alternatives and recommend solutions, are central to optimal decision making, resource utilization and return on assets

- **Advanced Early Warning Systems** are critical to providing maximum response time and the best solutions

Technology Challenge: Diversity

RHYTHM®



i2 Technologies

Technology Challenge : Requirements to Enable Maximum ROA

- **Optimize across** multiple decision support engines
- **Integrate** the complex array of technology platforms, data dictionaries, etc.
- **Rapidly deploy** new technology
- **Access, configure, and share** information easily
- **Display** multi-source data in common framework
- **Closed loop** decision making across multiple control domains

Technology Providers Roles

- **APS Vendors**

  provide solutions that enable people to make **optimized decisions**

- **ERP Vendors**

  provide software that is best suited for **executing and tracking transactions**

- **Database Vendors**

  provide solutions for **database management**

- **Hardware Vendors**

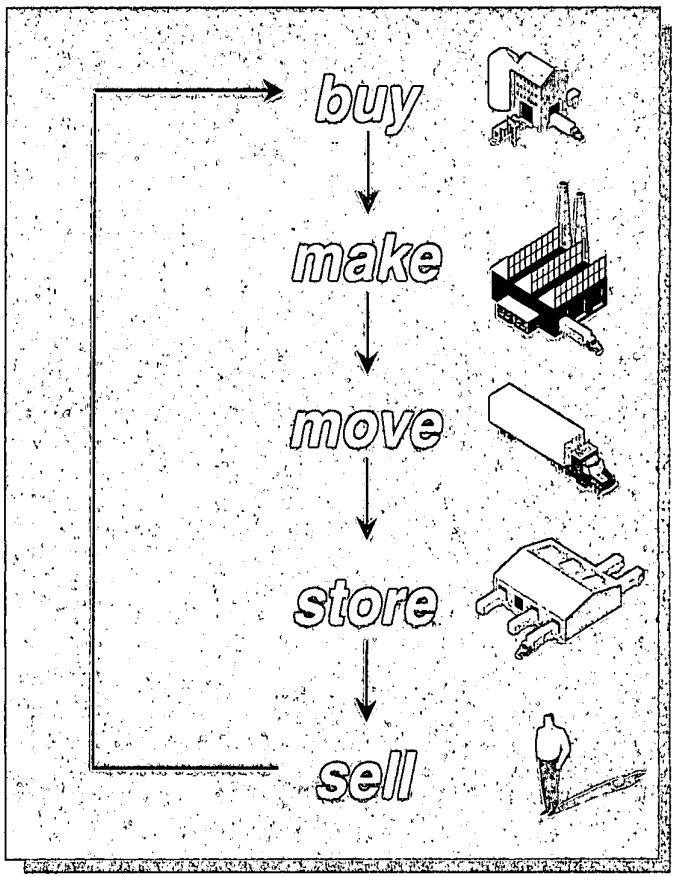
  provide solutions for **infrastructure**

Optimal Decision Support Requires World Class Solutions

- World Class **Applications**
- World Class **Architecture**
- World Class **Partners**

Example: Global Supply Chain Planning Enables Optimal Decisions for Business to:

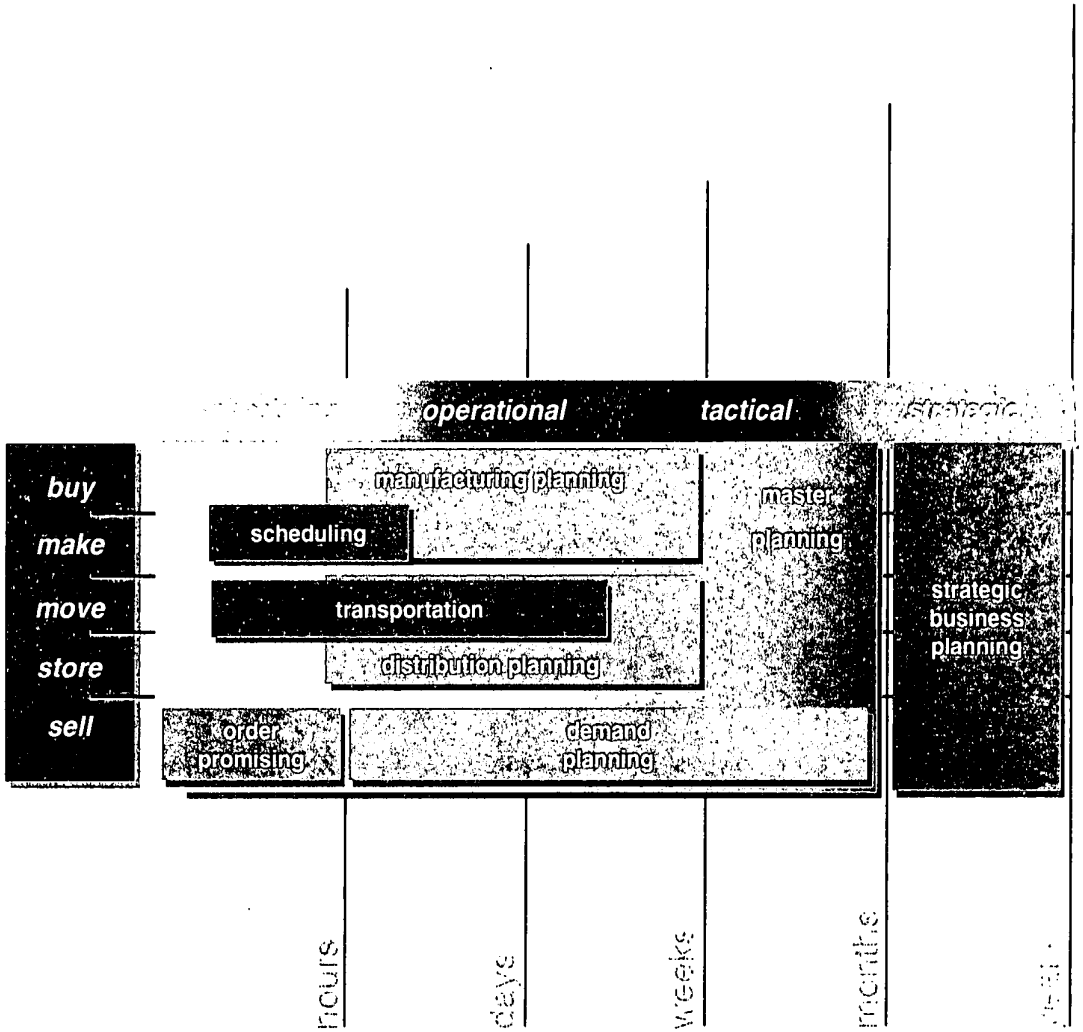
RHYTHM®



i2 Technologies

Solution Overview

RHYTHM®



i2 Technologies

Planning Funnel: Key Business Solutions

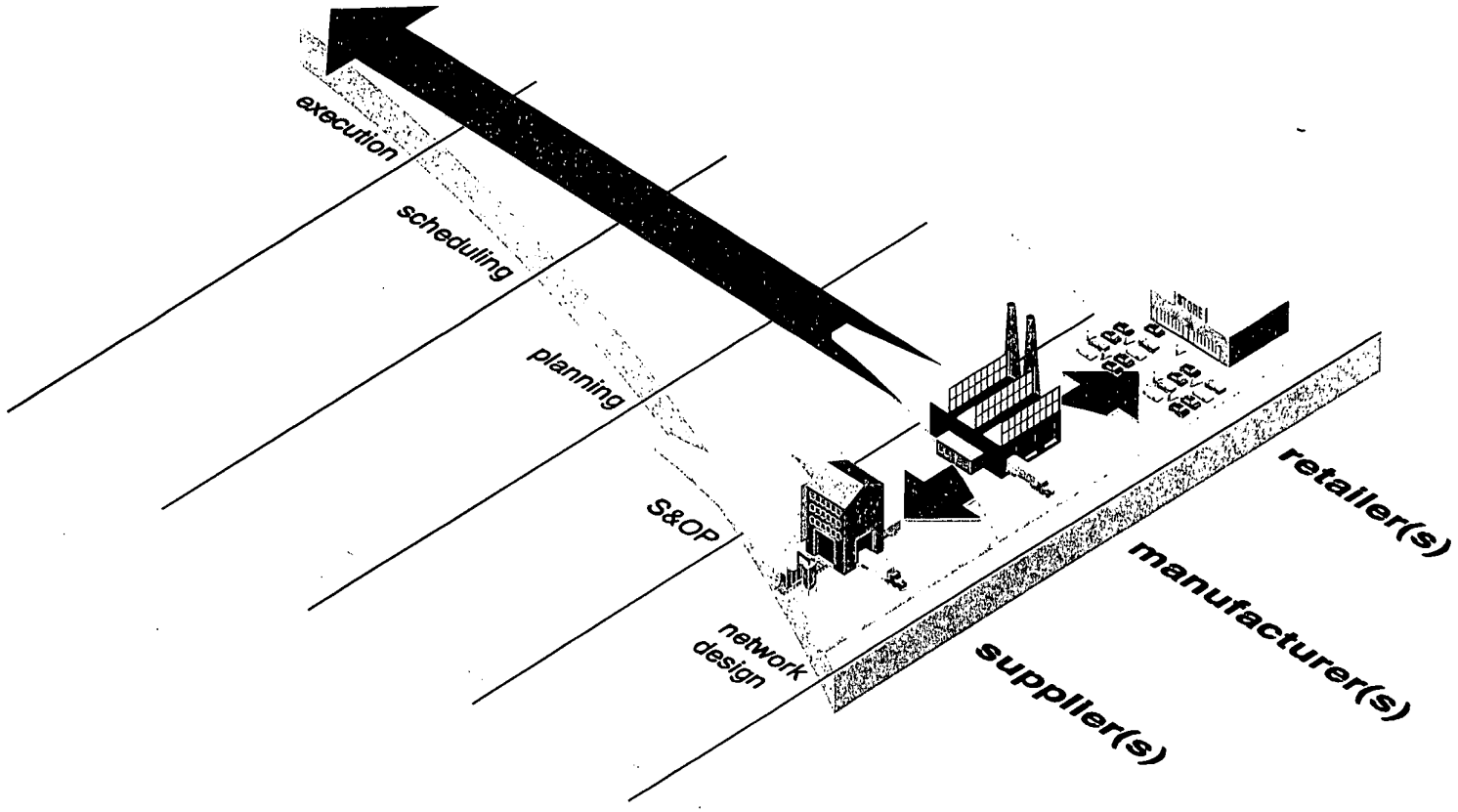
RHYTHM®

Supply Chain Segment	Key Business Solutions
• Strategic Planning	• Product Portfolio • Supply Network Structure • Acquisitions/Divestitures
• Tactical Planning	• Demand Creation • Demand/Supply Optimization • Inventory Optimization
• Operational Planning	• Promotion Planning • Sales & Operations Planning • Resource Optimization
• Scheduling	• Demand Fulfillment • Production Sequencing

i2 Technologies

Multi-Enterprise Planning

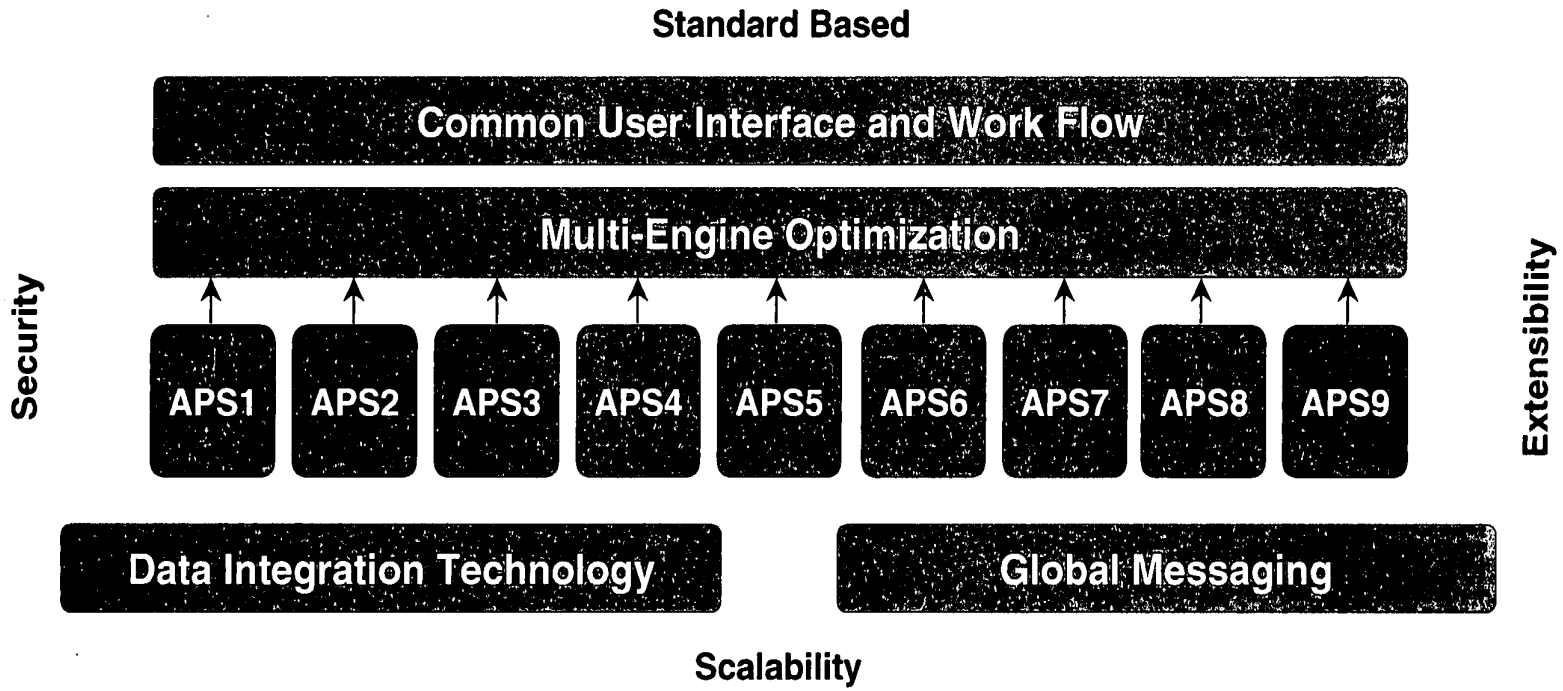
RHYTHM®



i2 Technologies

World Class Decision Support Solution Characteristics

RHYTHM®



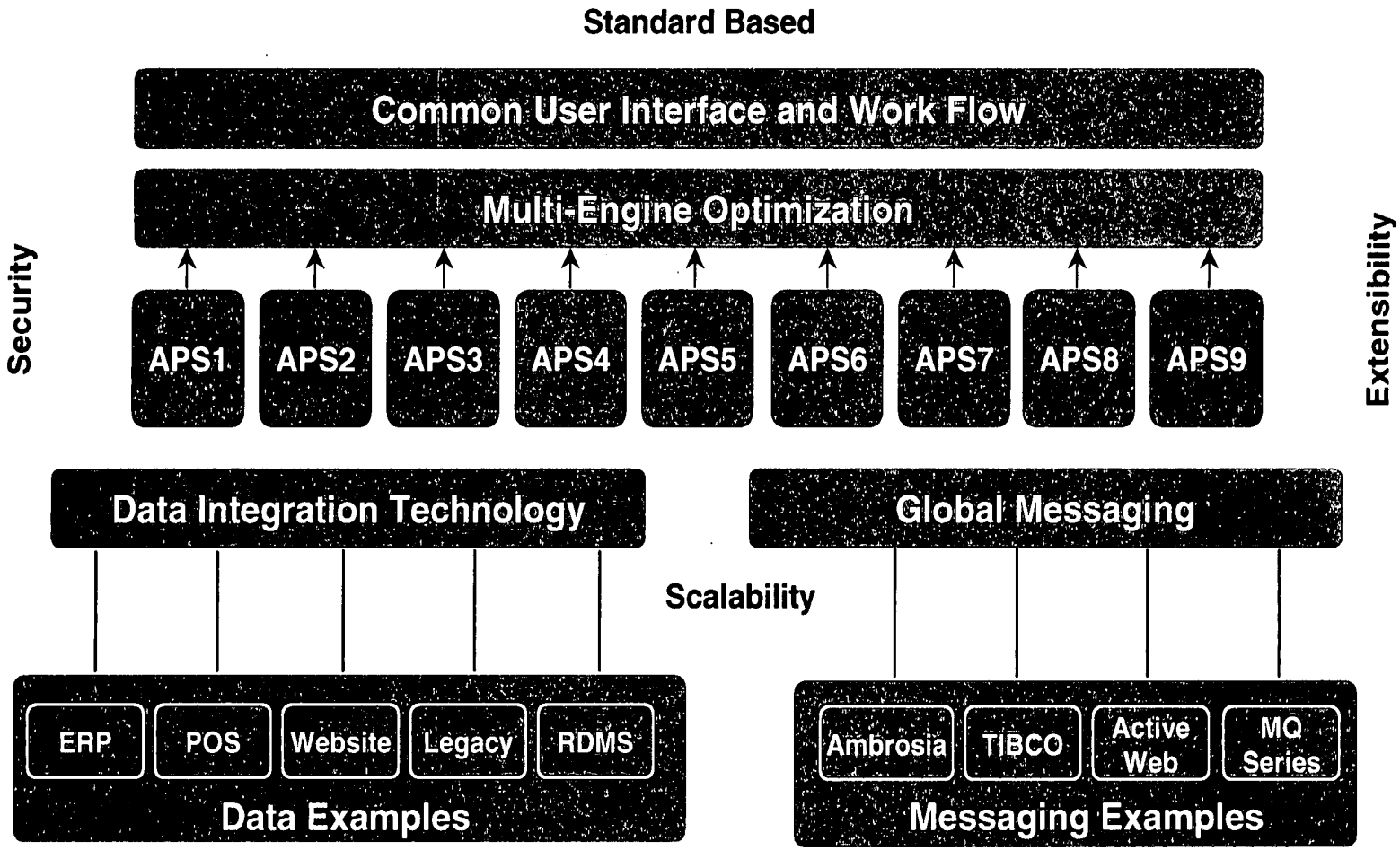
i2 Technologies

World Class Decision Support Solution Characteristics

- **Optimization**: Single and Multiple APS engines
- **Data Integration**: Multiple sources and definitions
- **Global Messaging**: Closed Loop Dialogue
- **GUI**: Single UI Infrastructure and Integrated Workflow
- **Commonalties**
  - Standards Based: Non Proprietary
  - Secure: No unauthorized access
  - Extensible: Users can augment capabilities
  - Scaleable: Number of simultaneous users and solutions

World Class Decision Support Solution

RHYTHM®



i2 Technologies

i2 Announces
Rhythm Decision Support Architecture

Rhythm Decision Support Solution Characteristics

RHYTHM®

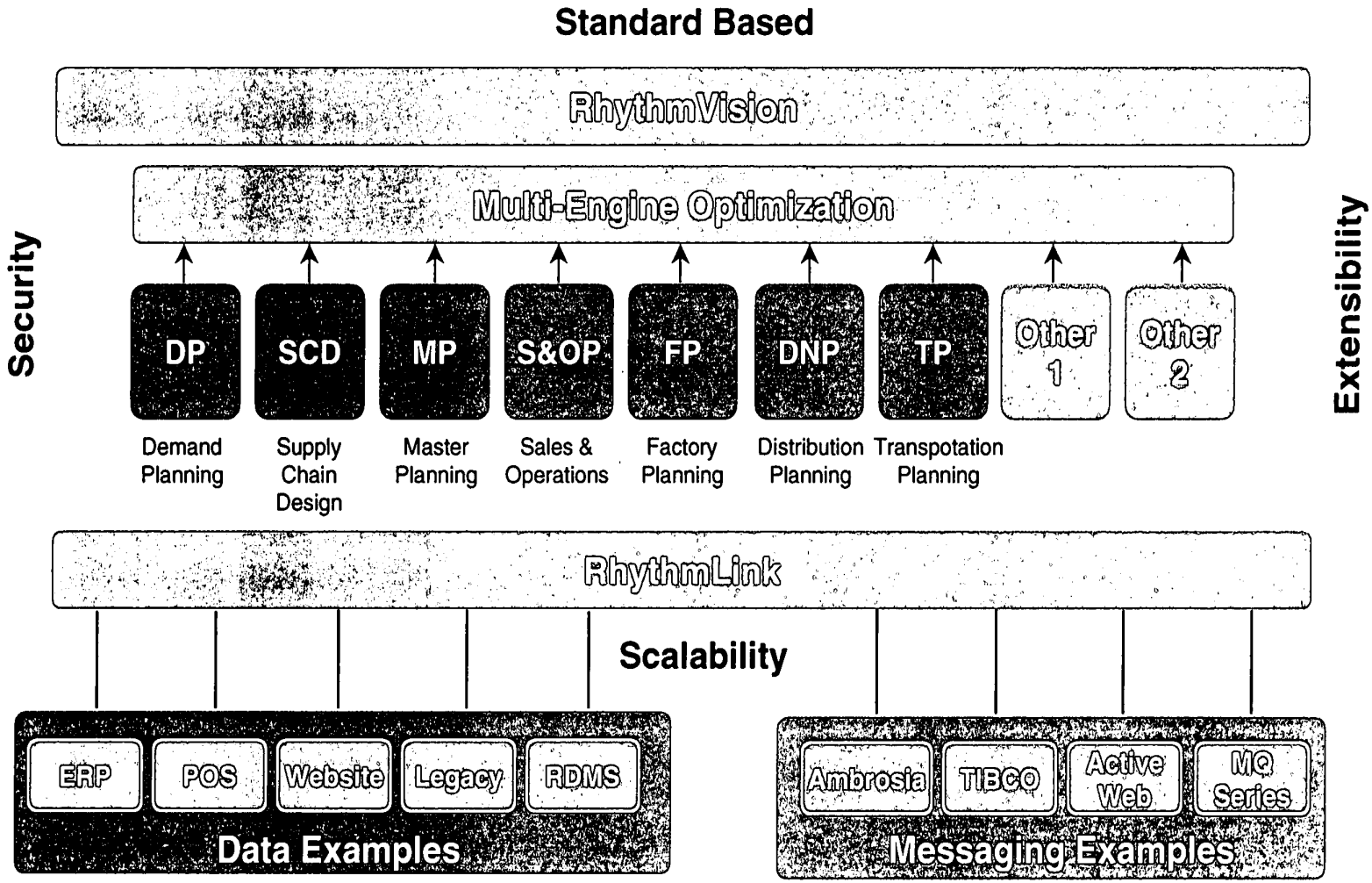
- **Rhythm Optimization**: Single and Multiple APS engines; including non i2 engines
- **RhythmLink**:Multiple information sources and data definitions;
  bi-directional and simultaneous information flow
- **RhythmLink:** Many to Many Closed Loop Dialogue and Collaboration

Rhythm Decision Support Solution Characteristics

- **RhythmVision**: Multi source Common UI Infrastructure and Wizards based multi-engine Integrated Workflow
- **Rhythm Commonalties**
  - Standards Based: Java, CORBA, DCOM
  - Secure: Client and Server level, down to individual objects
  - Extensible: Users can augment capabilities; modular
  - Scalable: Number of simultaneous users and solutions; multi threaded

RHYTHM Decision Support Architecture

RHYTHM®



i2 Technologies

Solution Characteristics : World Class Applications

- Comprehensive Problem Representation

  Example: Model complex multi enterprise multi stage supply chain

- Constraint Based Optimization

  Example: User defined optimization while respecting real world capacity, materials and supply limitations simultaneously

- Speed

  Example: Due Date Quoting on complex customer phone order

- Collaboration

  Example: Multi Vendor End Isle Promotion Planning

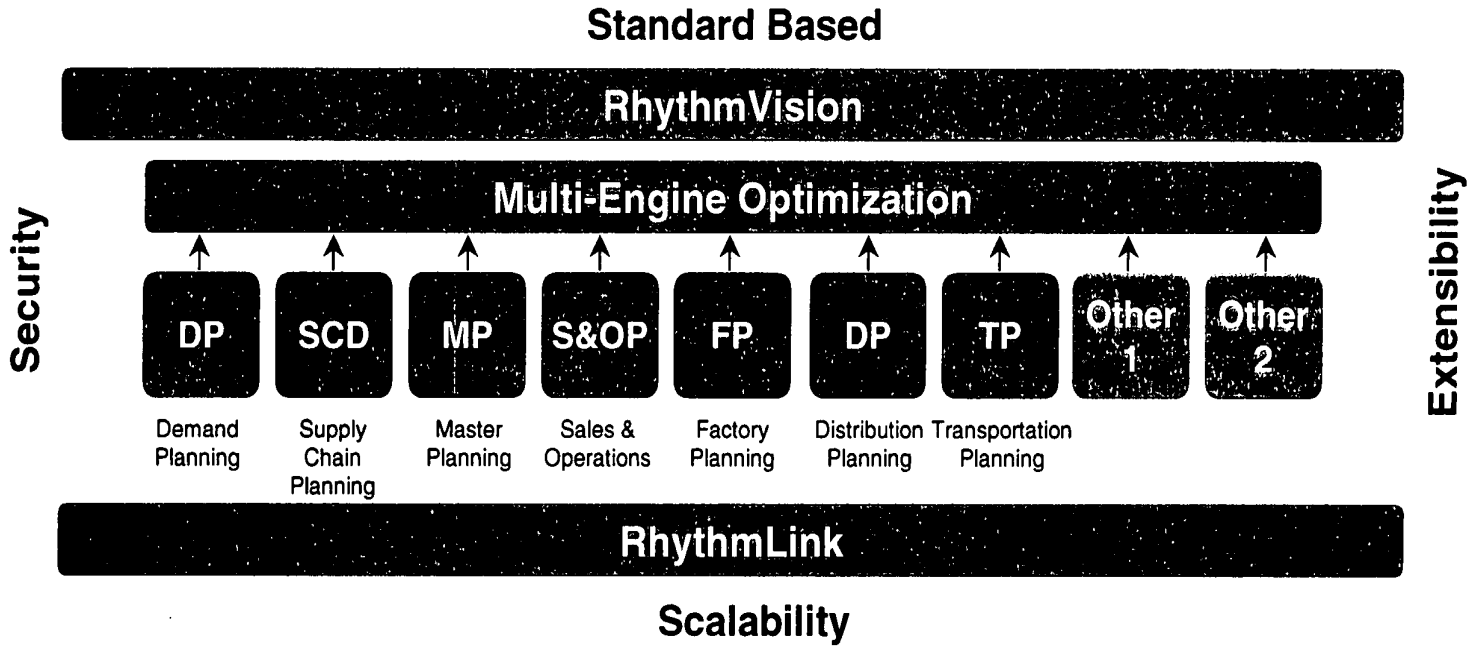
Business Value

RHYTHM®

World Class Application Characteristics	Business Value
• Comprehensive Problem Representation	• Feasible Solutions • Complete Solutions
• Constraint Based Optimization	• Optimized for User Defined Objectives • Key Constraint Leverage
• Speed	• Commitment Deferred • Responsiveness and Flexibility
• Collaboration	• Customer/Supplier Aligned Decisions • Forecast Accuracy Improved • Competitive Positioning Enhanced

Rhythm Optimization Solution Characteristics

RHYTHM®



Comprehensive Problem Representation

- Single Logical Model
- Configurable
- Extensible

Constraint Based Optimization

- Global Across Engines
- Match Resolvers to Problems

Speed

- Awareness
- Resolution

Collaboration

- Dynamic Information Exchange
- Consensus/ Resolution

i2 Technologies

Rhythm Optimization Solution Characteristics

RHYTHM®

- Comprehensive Problem Representation

Single Logical Model: Model the complexities and robustness of multi-dimensional problems within a single comprehensive logical framework

Example: SCP model can handle multiple control domains, thereby enabling Multi-Engine Optimization with local control

Configurable: Model real business environments in the computer in terms of operations, constraints, policies and objectives

Example: Modeling complex buffer inventory and replenishment policies, customized to each site and time variant

Extensible: Enable the core logic to be readily extended and enhanced without having to modify unaffected components

Rhythm Optimization Solution Characteristics

- Constraint-Based Optimization

Globally Across Engines: Optimize customer service, resources and ROA concurrently across multiple control domains and APS engines

Example: Strategy Driven Planning enables SCP to optimize across multiple sites and APS engines

Match Resolvers to Problems: Deploy the customized decision logic, from amongst the following examples, that best fits the problem characteristics:

Examples:

Simulated Annealing
Linear Programming
Holistic Techniques
Genetic Algorithms
Mixed Integers

Rhythm Optimization Solution Characteristics

RHYTHM®

- Speed

Awareness: Proactively identify challenges and opportunities, across the broadest scope, to provide maximum lead time to optimally signal and engage APS decision engines

Example: FYI Planner can proactively secure and analyze POS data to identify emerging trends in actual versus planned demand, and trigger a replanning alert

Resolution: Provide the optimal solution, from amongst a complex array of alternatives, in real time, to seize the window of opportunity

Example: SCP can respond to an ATP demand fulfillment query, based on delivery of end product to a customer ship to location, in seconds

Rhythm Optimization Solution Characteristics

RHYTHM®

- Collaboration

Dynamic Information Exchange: Real time access, configuration and incorporation of all relevant types of information, including data, business objects, etc.

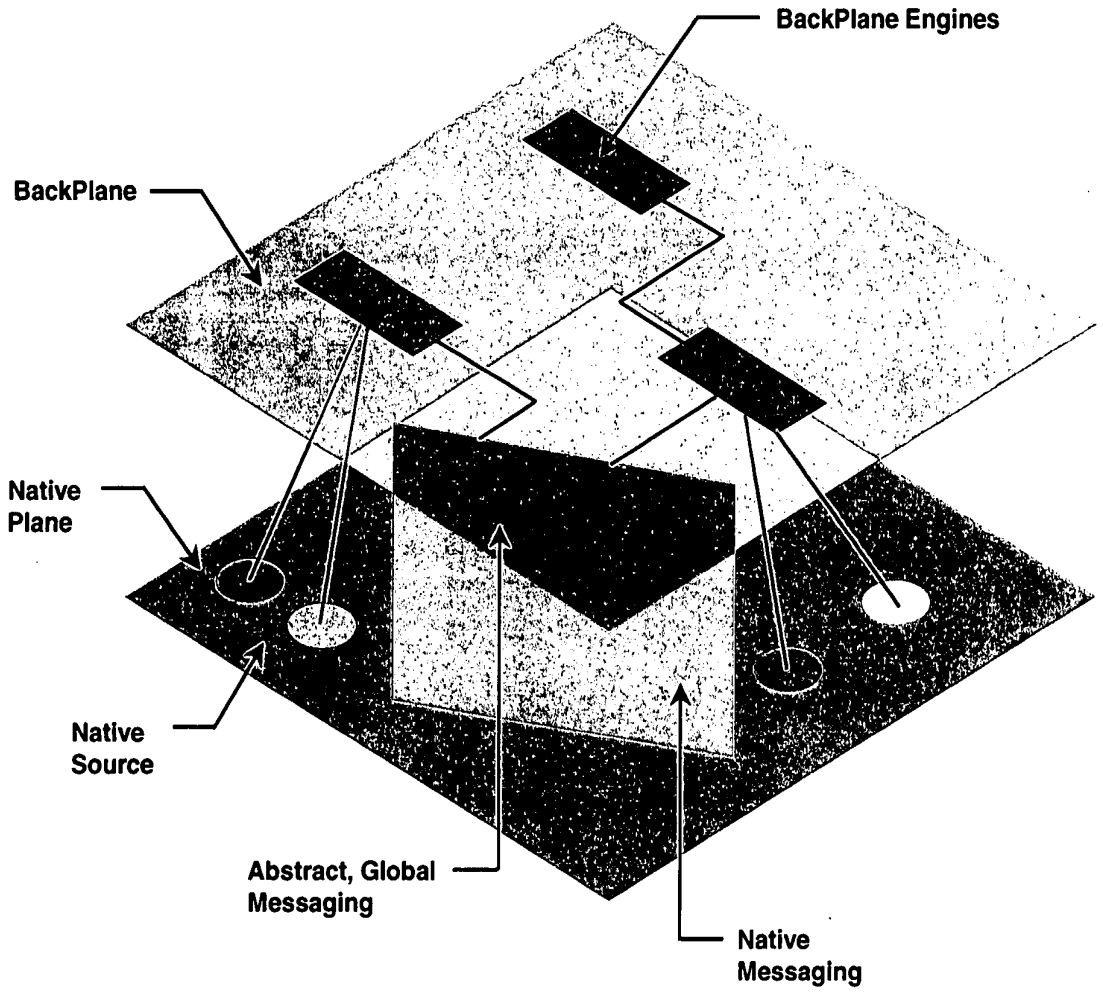
Example: RhythmLink enables exchange of distributed objects among multiple APS engines

Consensus/Resolution: Drive to agreement on common information, across multiple control domains, from differing positions

Example: SCP Request/Promise/Commit enables multi-engine multi-enterprise collaboration on product/item requirements

Universal BackPlane Adapter

RHYTHM®

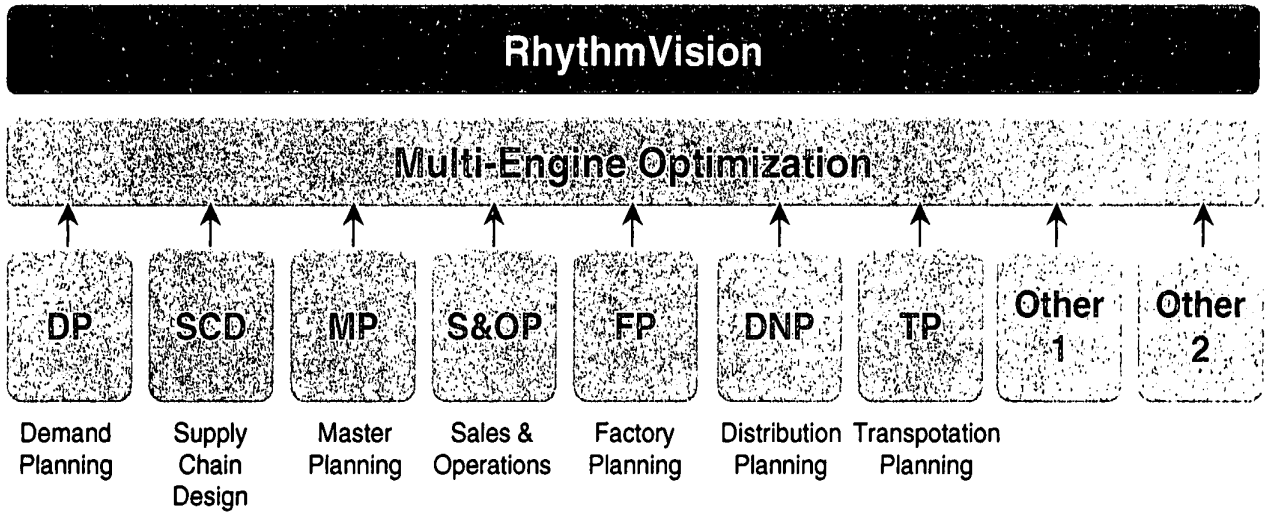


i2 Technologies

RhythmVision Solution Characteristics

RHYTHM®

Standard Based



Configurable | **Integrated Workflow** | **Navigation** | **Common UI** | **Multi-Engine Workflow** | **Load Balancing**

i2 Technologies

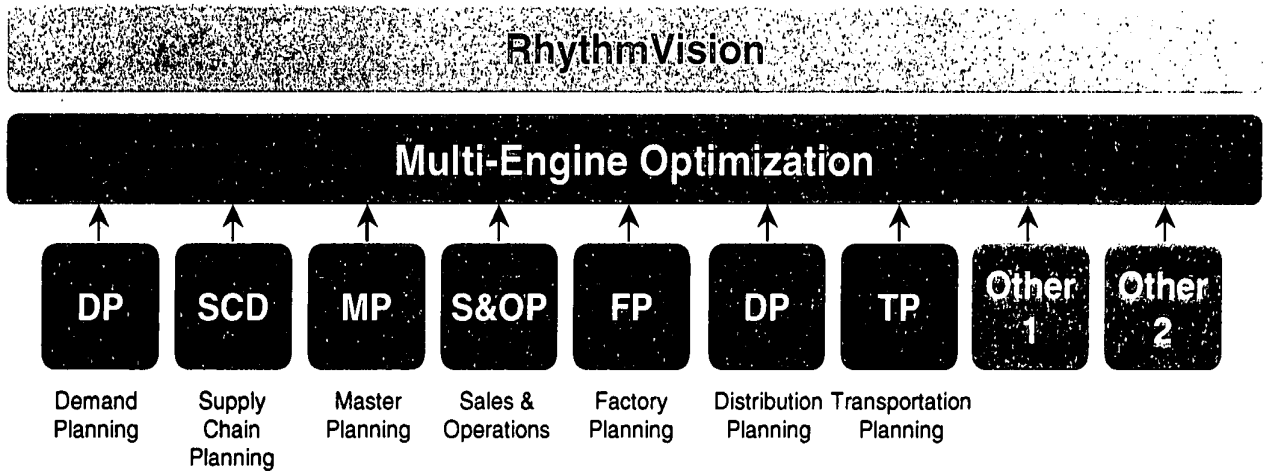
RhythmVision Solution Characteristics

- **Configurable:** Wizard enabled User configurability
- **Integrated Workflow:** Solution driven best business practices integral component of application
- **Navigation:** Multiple highly graphical navigation methods, including supply chain modal view, Workflow Wizards, etc.
- **Common UI:** Launch all Rhythm solutions from common interface, display multi-source data on single screen
- **Multi-Engine Workflow:** Enables complex Wizard facilitated workflows involving multiple engines solutions
- **Load Balancing:** Enables optimal response times and network resource utilization in multi-engine solutions

Rhythm Optimization Solution Characteristics

RHYTHM®

Standard Based



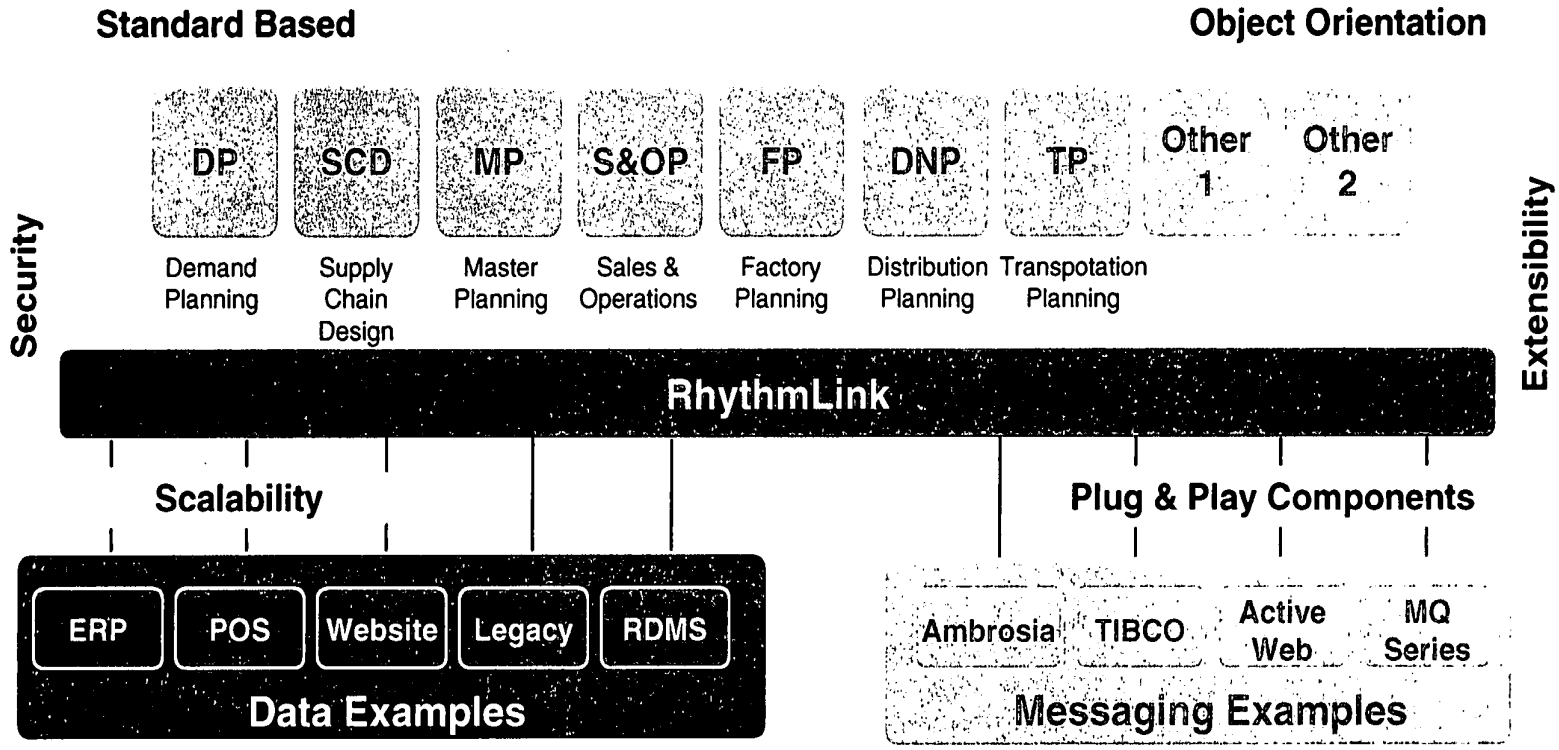
Memory Residence | **Model Configuration** | **Bi-Directional Propagation** | **Distributed Algorithms** | **Intelligent Agents** | **Common Object Model**

i2 Technologies

Rhythm Optimization Solution Characteristics

- **Memory Residence:** Results in extremely fast response times
- **Model Configuration:** Enables complex representations of solutions and multiple layered solution strategies
- **Bi-Directional Propagation:** Feasibly resolves entire problem upstream/downstream of constraints
- **Distributed Algorithms:** Enables optimization incorporating multiple APS engines and/or multiple platforms
- **Intelligent Agents:** Event triggered complex business logic shared among multiple APS engines
- **Common Object Model:** Shared business logic enables multi-engine solutions

RhythmLink Data Integration Solution Characteristics

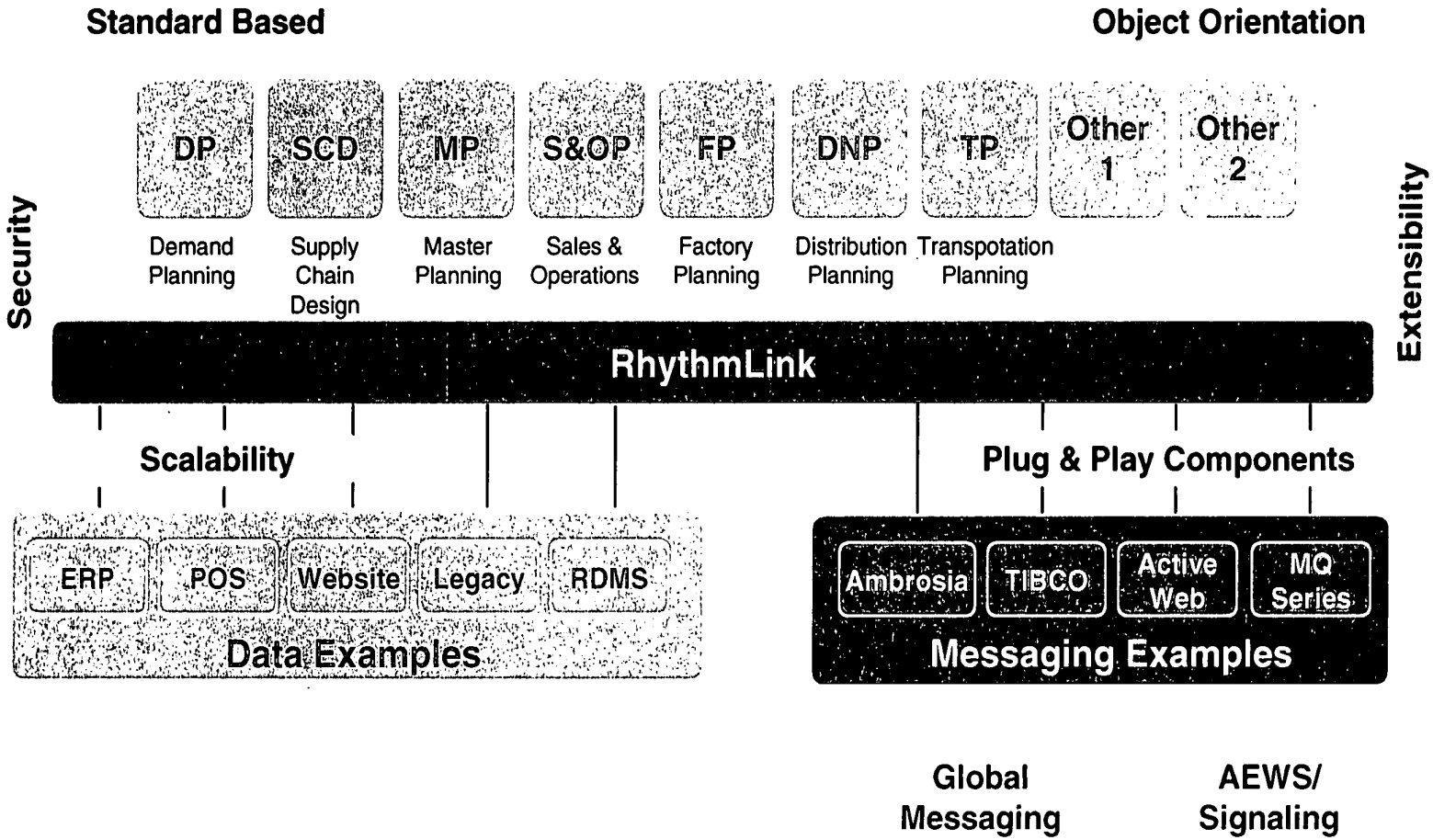


i2 Technologies

RhythmLink Data Integration Solution Characteristics

- **Multi-Source Data:** Access data from multiple information sources simultaneously including ERP, POS, Legacy, etc.
- **Data Configuration:** Adapt data with different definitions of Product, Location, Time, etc to a common framework
- **Data Permanence:** Ensures data consistency and retention
- **Multi-Sourcing Synchronization:** Ensures time integrity and consistency of data sourced from multiple locations
- **Common Data Model:** Enables complex analysis of information from multiple sources based on translation to common definition

RhythmLink Global Message Bus Solution Characteristics



i2 Technologies

RhythmLink Global Message Bus Solution Characteristics

- **Global Messaging:** Supports complex one-to-many closed loop collaboration and object focused dialog
- **AEWS/Signaling:** Enables proactive multi-engine Advanced Early Warning System with integrated workflow to engage APS engines

Multi-Enterprise Solution Example: Single Face To Customer

RHYTHM®

Solution Requirement

- Global Demand Fulfillment via Global Sourcing
- Demand Prioritization based on Product, Customer, Location, etc.
- Multi Product, Multi Ship To, Multi Ship When
- Combinations of Make To Stock, Make To Order, Configure To Order, etc.
- Substitution Alternatives for Product, Ship To and Ship When
- Demand Commit, Order Tracking, Order Status
- Advanced Early Warning System

Business Value

- Prioritized Customer Service
- Improved Customer Fill Rates
- Improved Responsiveness
- Reduced Order Cycle Time
- Reduced Inventories
- Increased Customer Market Share and Revenues
- Increased Customer Market Share Stability
- Improved Customer Satisfaction
- Reduced Sales Costs
- Improved Asset Utilization

Phase I:
Available Now

- **Rhythm Optimization Solutions**
  - Strategic Business Planning
  - Master Planning
  - Demand Planning
  - Manufacturing Planning
  - Distribution Planning
  - Transportation Planning
  - Order Promising
  - Scheduling
- **RhythmLink**
  - Comprehensive multi-directional multi-source data extraction, manipulation and configuration
  - Dynamic UI based capability to reconfigure data requirements
  - Distributed Objects
- **RhythmVision**
  - Common UI architecture supporting multiple UI types across multiple data sources and APS engines
  - Wizard based best practices workflow
  - Common components, extensibility, security and user model
  - Common UI data model, routing and load balancing

Phase II:
Available December 31 '97

RHYTHM®

- **RhythmLink**

  Global Messaging:

  Secure, closed loop object focused dialogue, publish and subscribe broadcasting

  Supply Chain Architect:

  Enables rapid Wizard based common model generation, auto configuration and auto sourcing of multi-engine solutions

  Business Object Servers:

  Create complex business objects from multiple, diverse data sources vis Business Object Driver Adaptors

  Fault-Tolerant 24X7 Servers:

  Guaranteed Global ATP uptime

- **RhythmVision**

  Multi-Enterprise Best Practices Templates:

  User configurable Wizards that provide best practice roadmaps for solving multi-enterprise and multi APS business problems

Phase III:
Available by July 31 '98

- **Rhythm Optimization Solutions**
  - Sales & Operations Planning
  - Demand Creation
  - Global Inventory Manager
  - Web Based Co Managed Inventories
  - Global Demand Fulfillment
  - Web Based ATP and DDQ
  - Web Based Collaborative Forecasting and Replenishment
- **RhythmLink**

  Security:

  Comprehensive client and server level security, down to object level
- **RhythmVision**

  Global Early Warning System:

  Robust, proactive multi-engine and multi-source prioritized signaling and workflow

Summary

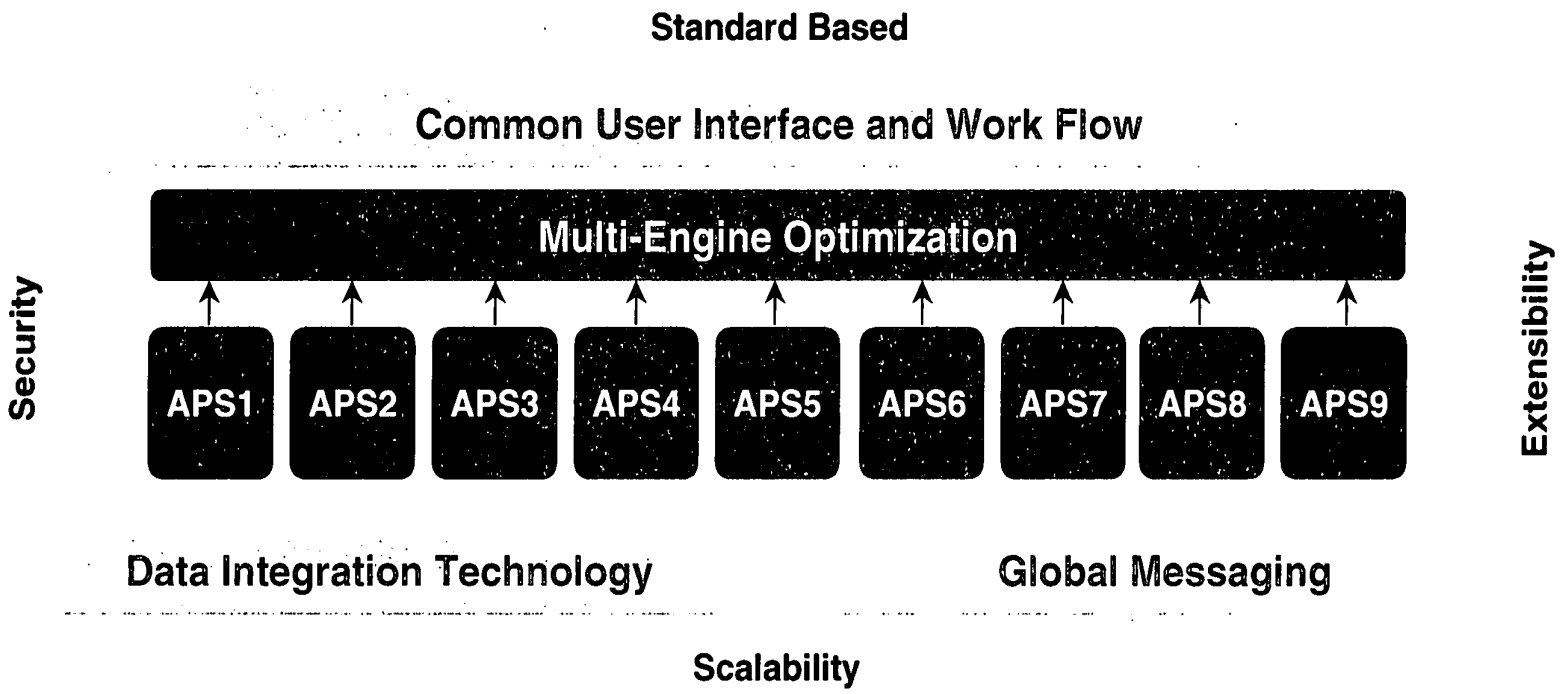
- Optimized Decision Making Drives ROA
- Optimized Decision Making requires technology that supports multiple decision engines and diverse information sources
- i2 provides applications an open architecture that delivers maximum value

RHYTHM®

BACKUP SLIDES

World Class Decision Support Solution Characteristics

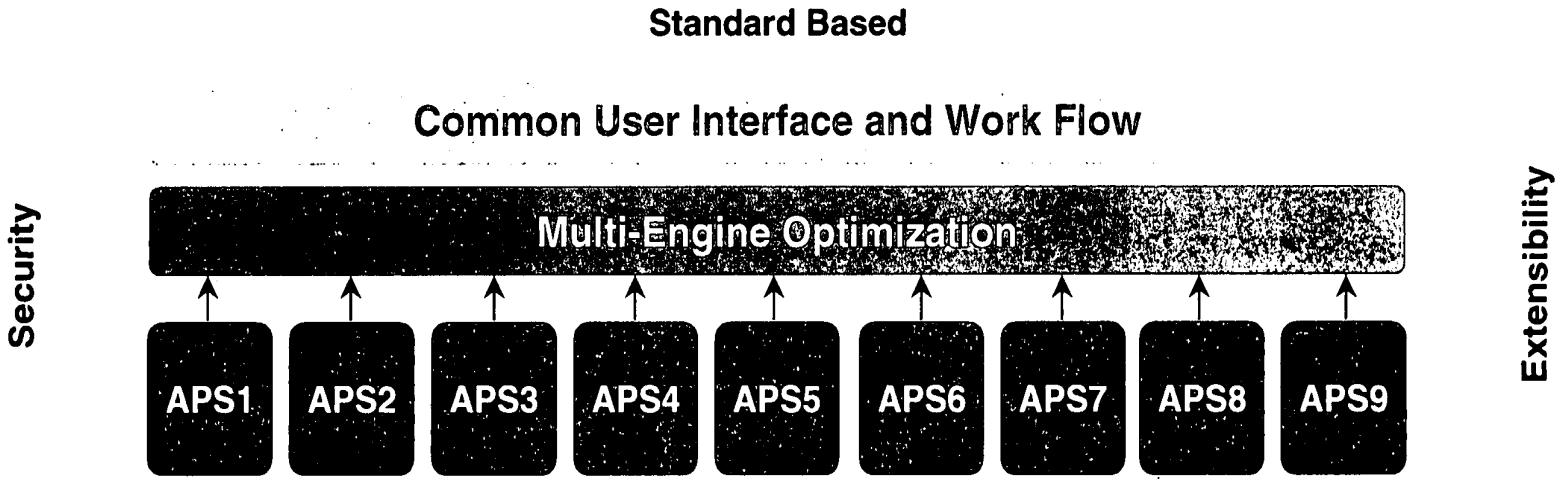
RHYTHM®



i2 Technologies

World Class Decision Support Solution Characteristics

RHYTHM®



Comprehensive Problem Representation

- Single Logical Model
- Configurable
- Extensible

Constraint Based Optimization

- Global Across Engines
- Match Resolvers to Problems

Speed

- Awareness
- Resolution

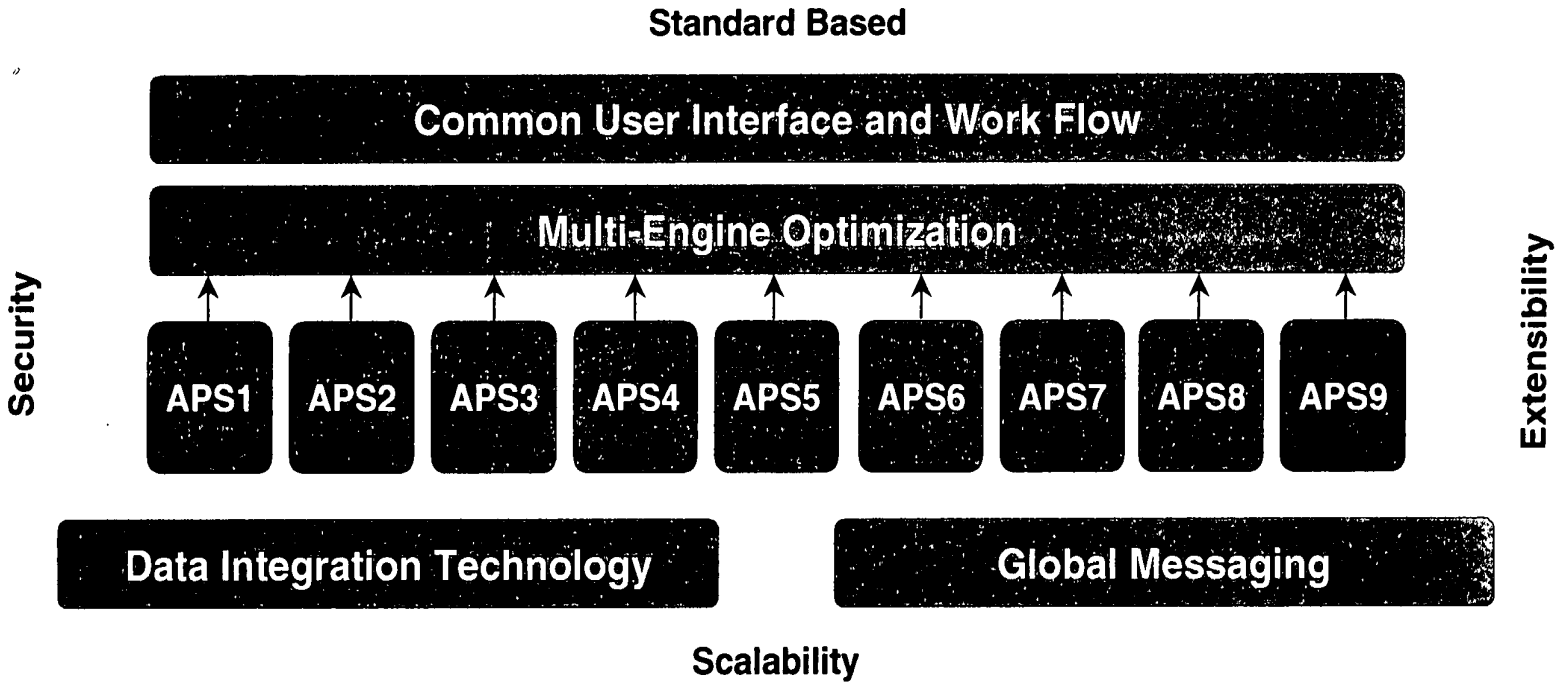
Collaboration

- Dynamic Information Exchange
- Consensus/ Resolution

i2 Technologies

World Class Decision Support Architecture

RHYTHM®

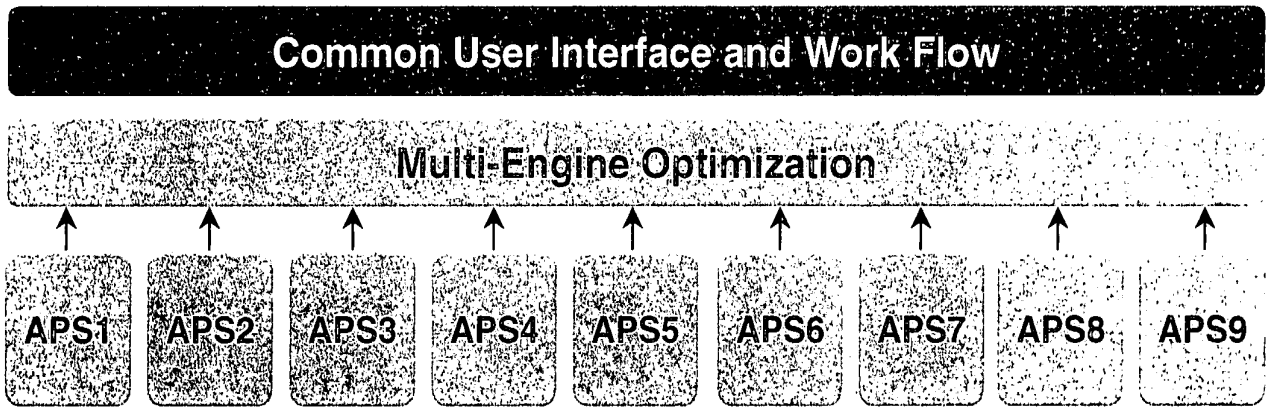


i2 Technologies

Decision Support Single Engine: Solution Characteristics

RHYTHM®

Standard Based



Configurable

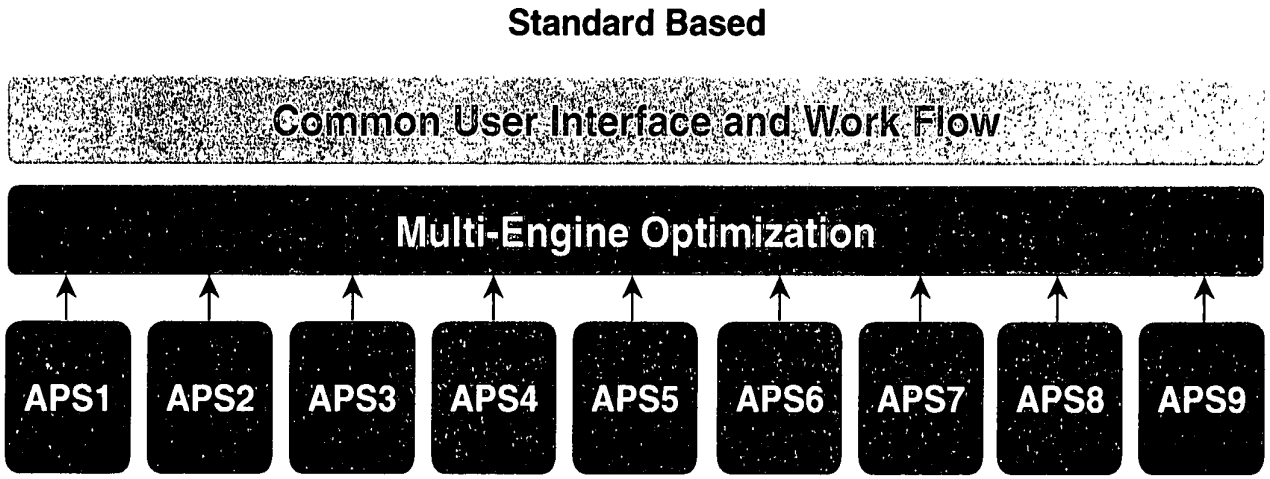
Best Practices Workflow

Navigation

i2 Technologies

Decision Support Single Engine: Solution Characteristics

RHYTHM®



Memory Residence

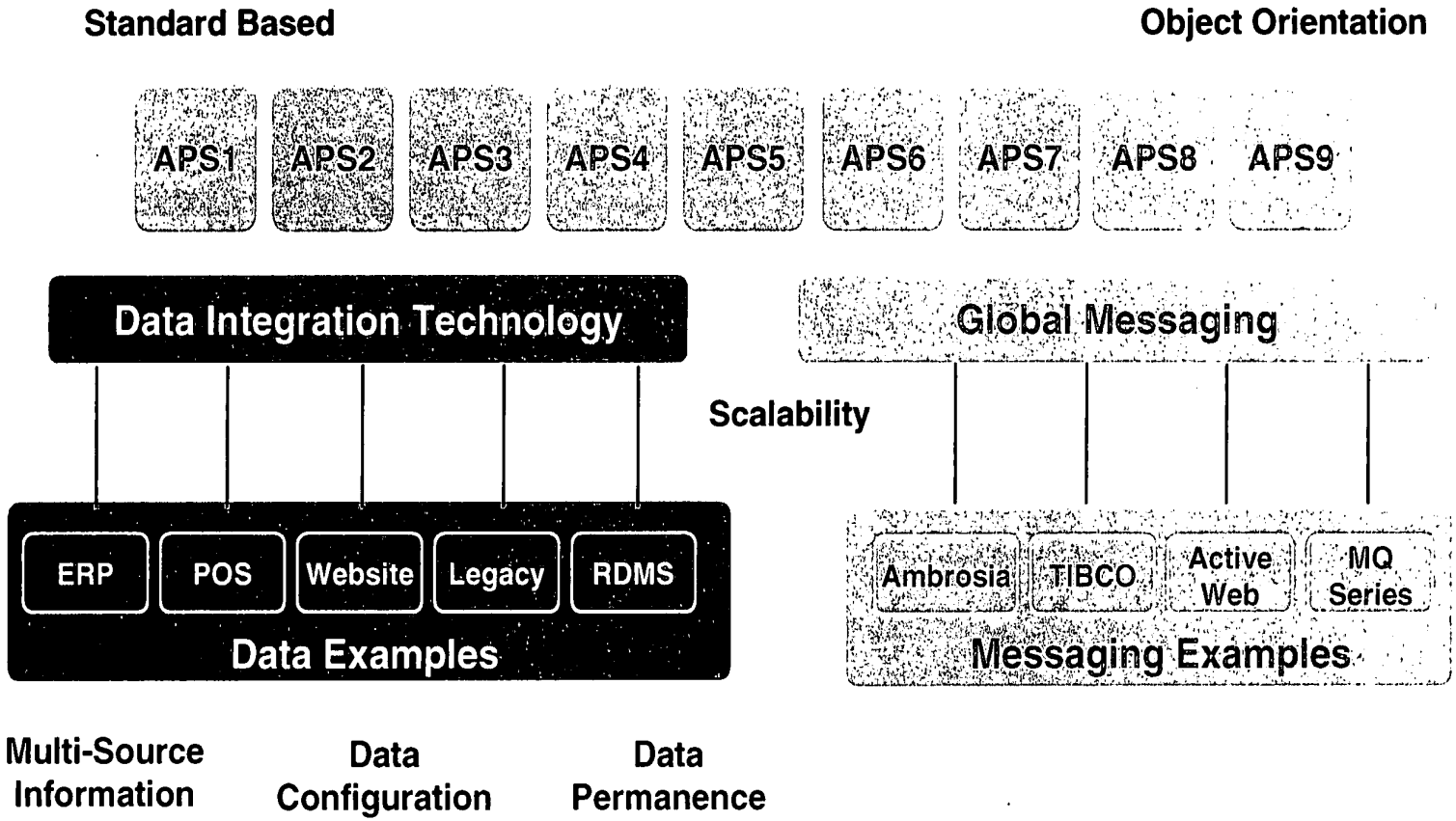
Model Configuration

Bi-Directional Propagation

i2 Technologies

Decision Support Single Engine: Solution Characteristics

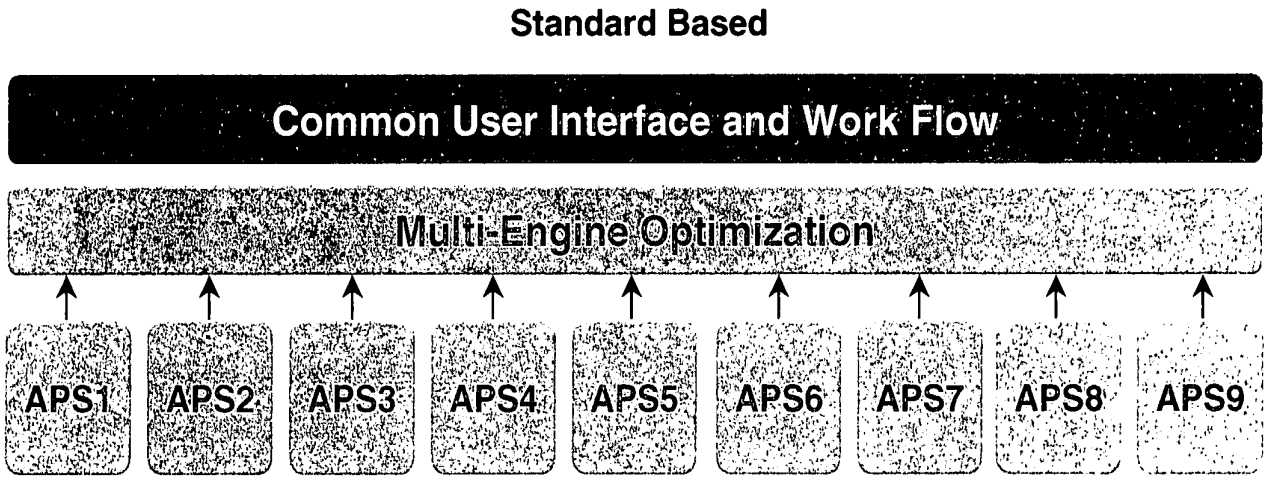
RHYTHM®



i2 Technologies

Decision Support Multi-Engine: Solution Characteristics

RHYTHM®



Configurable

Integrated Workflow

Navigation

Common UI

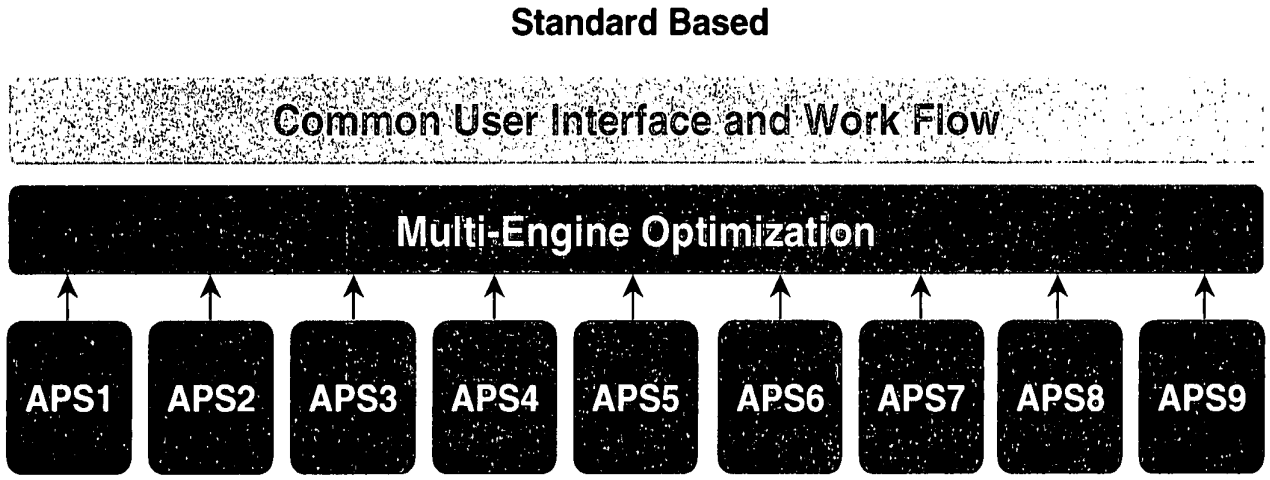
Multi-Engine Workflow

VIB Load Balancing

i2 Technologies

Decision Support Multi-Engine: Solution Characteristics

RHYTHM®

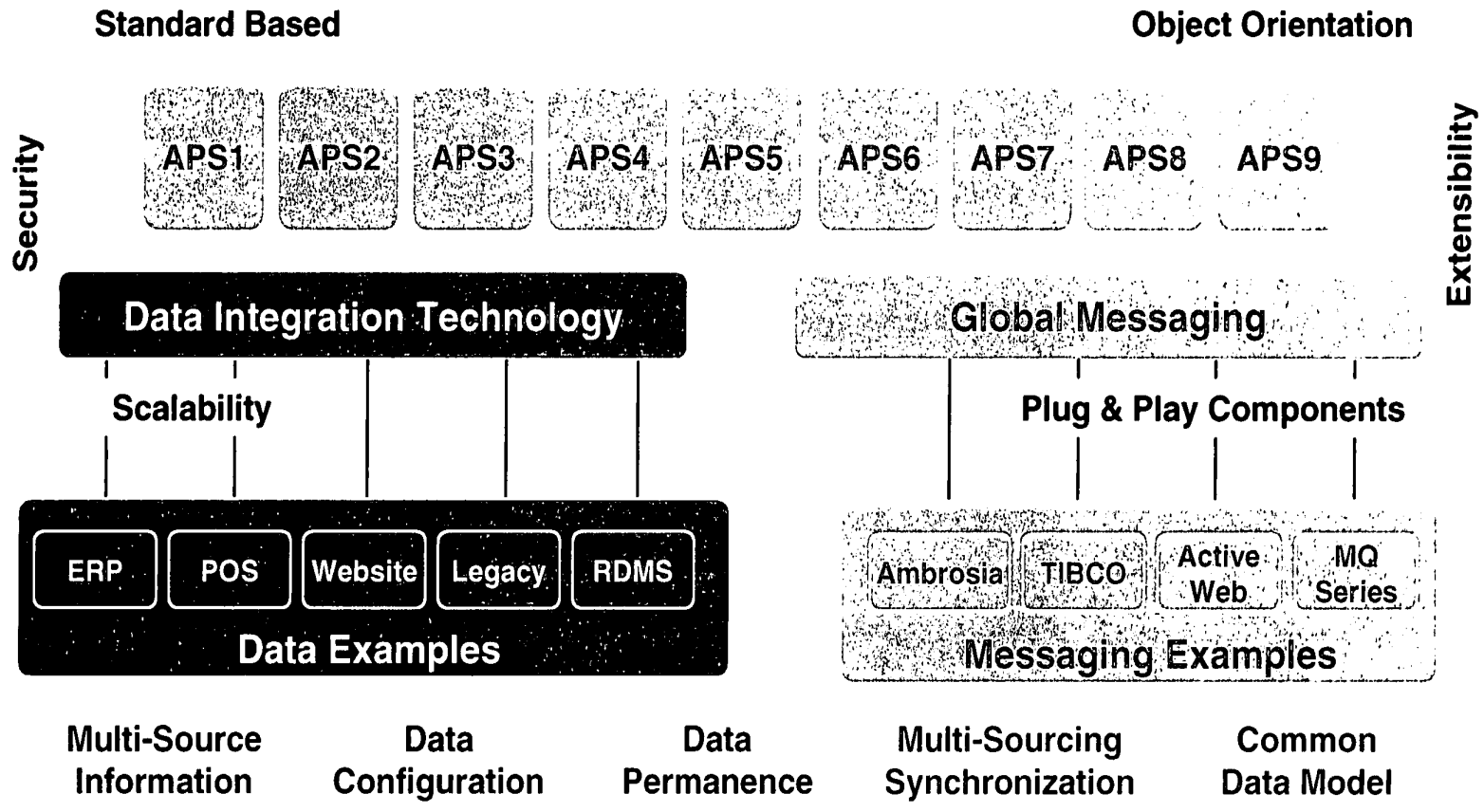


Memory Residence	Model Configuration	Bi-Directional Propagation	Distributed Algorithms	Intelligent Agents	Common Object Model

i2 Technologies

Decision Support Multi-Engine: Solution Characteristics

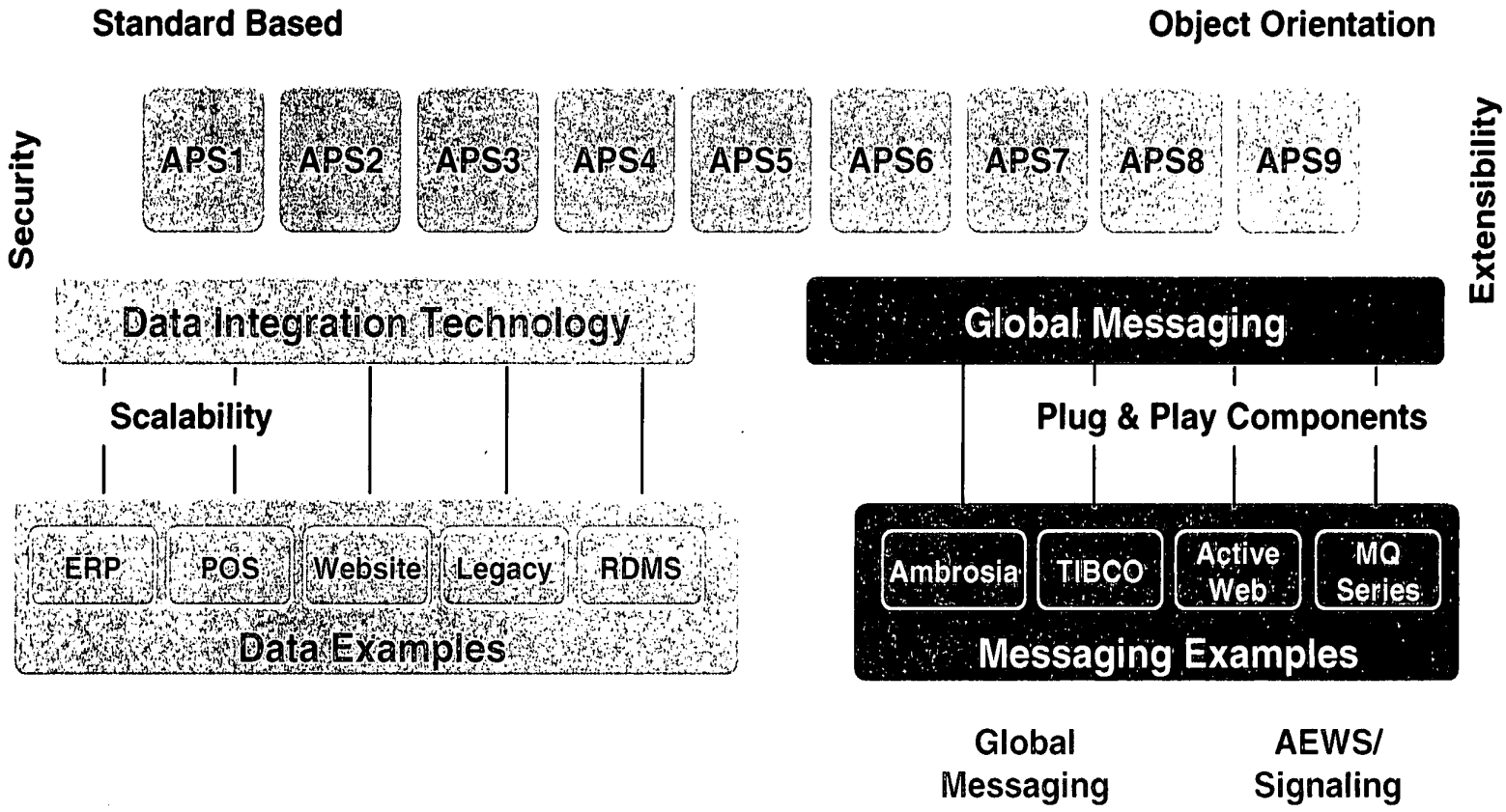
RHYTHM®



i2 Technologies

Decision Support Multi-Engine: Solution Characteristics

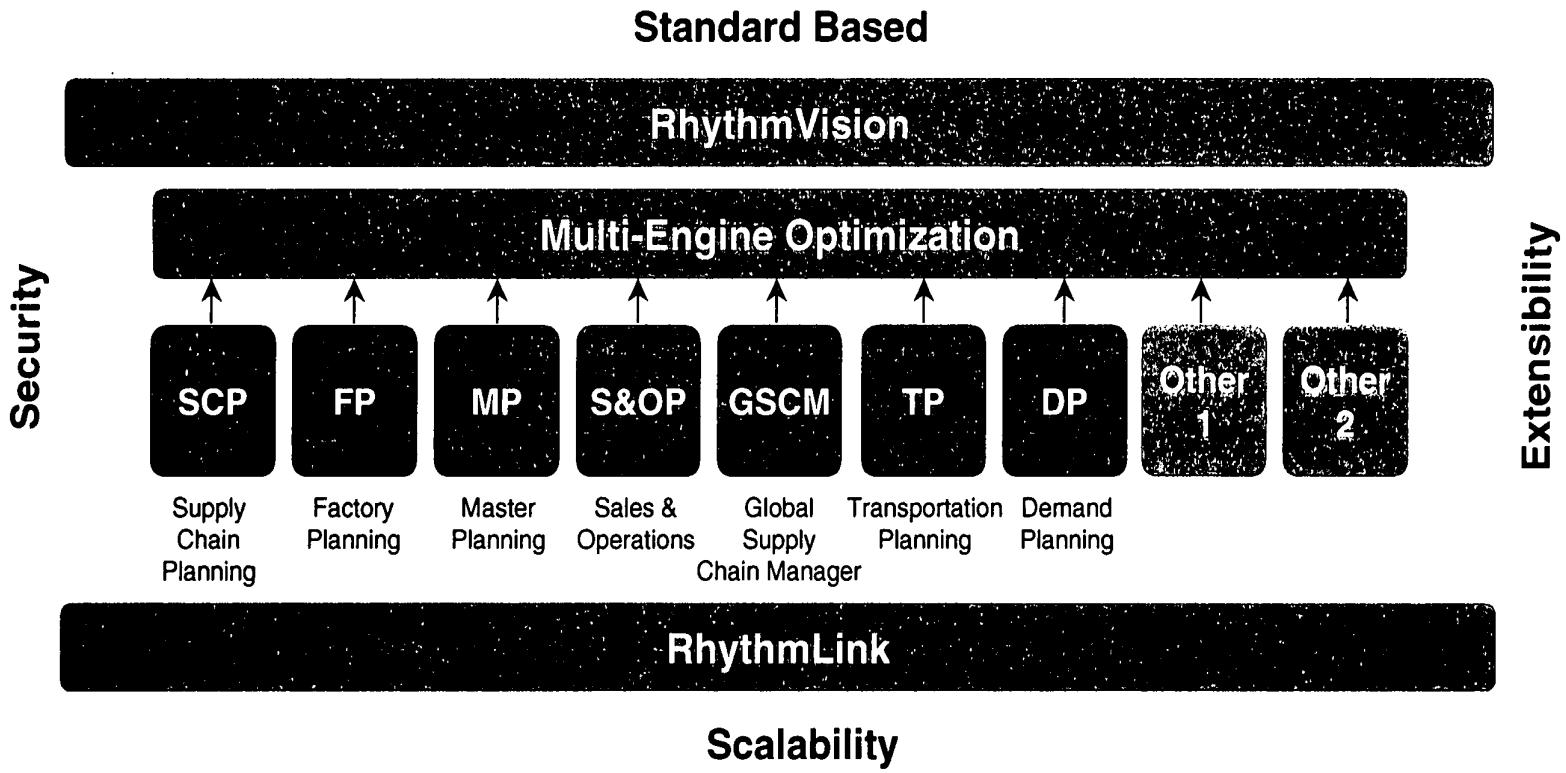
RHYTHM®



i2 Technologies

Rhythm Decision Support Architecture

RHYTHM®



i2 Technologies

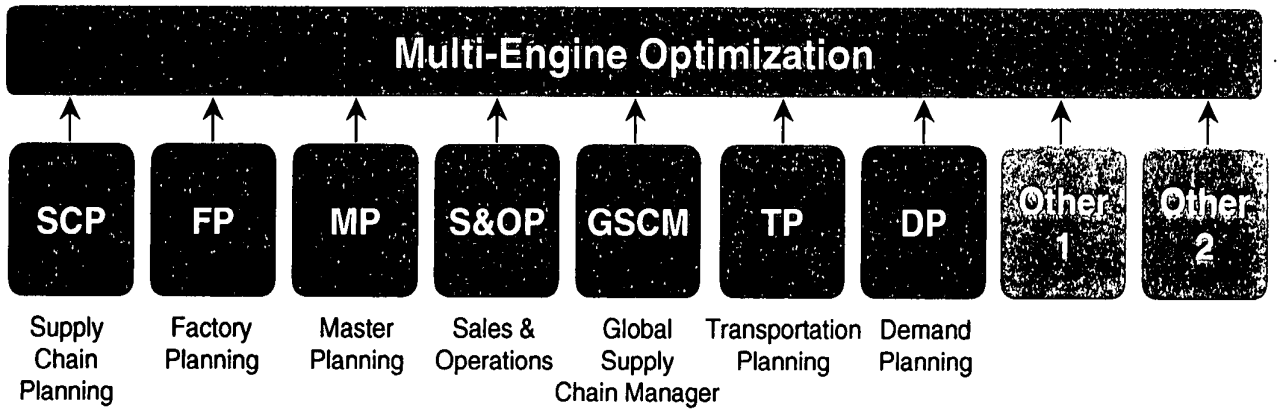
RhythmVision Solution Characteristics

RhythmVision

- Configurable
- Integrated Workflow
- Navigation
- Common UI
- Multi-Engine Workflow
- VIB Load Balancing

Rhythm Optimization Solution Characteristics

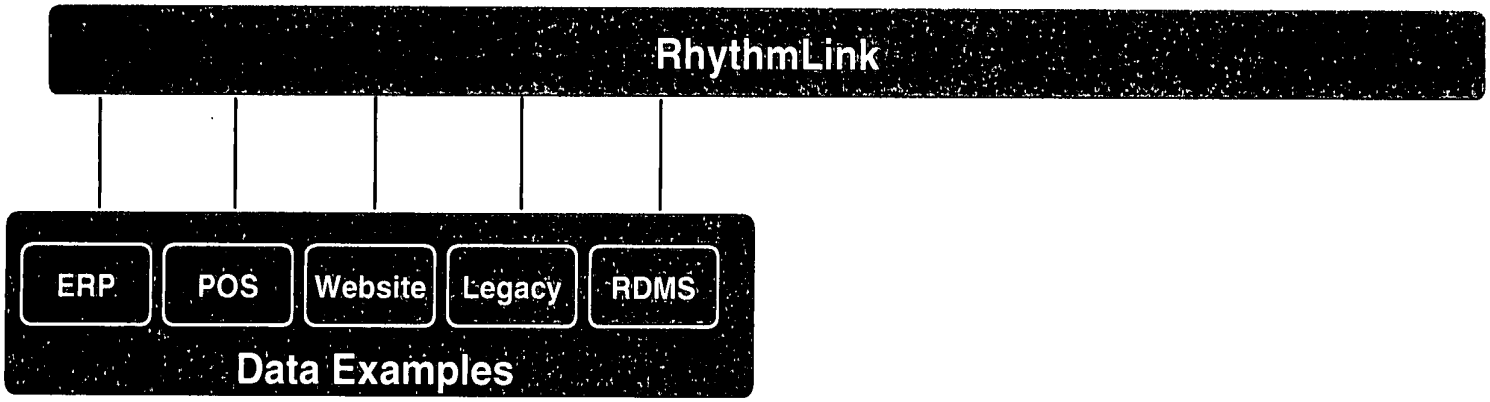
RHYTHM®



Memory Residence | **Model Configuration** | **Bi-Directional Propagation** | **Distributed Algorithms** | **Intelligent Agents** | **Common Object Model**

i2 Technologies

RhythmLink Data Integration Solution Characteristics



Multi-Source Information

Data Configuration

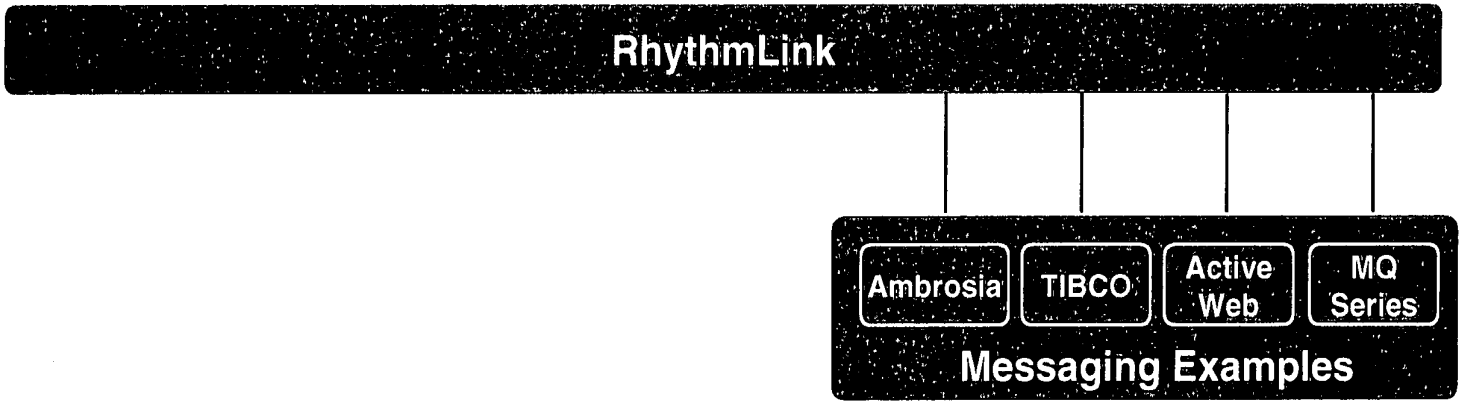
Data Permanence

Multi-Sourcing Synchronization

Common Data Model

RhythmLink Global Message Bus Solution Characteristics

RHYTHM®



Global Messaging

AEWS/ Signaling

i2 Technologies

Alliance Partners

- (Mike Ellis)

Solutions for World Class Partners

- Change Management
- Organizational Redesign
- Performance Metric Redesign
- Business Process Re-Engineering
- Business Process Re-Training
- Systems Integration

Solutions for World Class Implementation

- Speed to ROA
- Value Pricing
- Technology Transfer
- Training
- Project Management
- Business Release Methodology
- Model Configuration
- Data Definition and Integration